

ATTACHMENT J

HAZARDS OF ELECTROMAGNETIC RADIATION ORDNANCE

On-site use of devices that emit electromagnetic radiation (EMR) presents a significant hazard due to susceptibility of electro-explosive devices (EED) to accidental detonation by EMR. EMR-emitting devices include many of the common types of communication equipment and navigation aids regularly employed on site (e.g., cellular telephones, two-way radios). While curtailment in use of these devices is preferable, some on-site activities are required. Accordingly, the ordnance and explosives (OE) hazard distance (referred to as the safe separation distance [SSD]) must be determined for each device that emits or produces EMR.

Table F-1 presents the formulas used to calculate SSD, based on the emission frequency of the EMR and the following parameters:

- D = SSD (in feet)
- F = EMR frequency (in megahertz [MHz])
- P = EMR output power (in watts)
- G = absolute (numerical) power gain ratio of the transmitting antenna (unitless).

Table F-1. Safe Separation Distance Formulae

Frequency Range	SSD Formula
$f < 0.02 \text{ MHz}$	$D = 0.093 \times (PG)^{0.5}$
$0.02 \text{ MHz} \leq f < 0.1 \text{ MHz}$	$D = 4.63f \times (PG)^{0.5}$
$0.1 \text{ MHz} \leq f < 2.0 \text{ MHz}$	$D = 18f \times (PG)^{0.5}$
$2.0 \text{ MHz} \leq f < 32 \text{ MHz}$	$D = 90 \times (PG)^{0.5}$
$32 \text{ MHz} \leq f < 1,000 \text{ MHz}$	$D = 1,200/f \times (PG)^{0.5}$

The following rules should be observed when calculating SSDs:

- Rule 1: Where emissions occur over a range of frequencies, the SSD will be determined for the highest and lowest frequency in the range, and the greater value accepted as the SSD for the device.
- Rule 2: If the device can be manually set to operate at different frequencies, a separate distance can be calculated for each operating frequency. If frequencies can be changed automatically, the set of available frequencies should be treated as a range and analyzed per Rule 1.

Calculated SSDs for each device should be recorded on an SSD Log that has been established for the site. The information should also be affixed to each device so that it is readily identifiable by device operators.

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